NOTICE
GLENPOOL UTILITY SERVICE AUTHORITY
REGULAR MEETING

A Regular Session of the Glenpool Utility Service Authority will be held at 6:00 p.m. immediately following the Glenpool City Council Meeting on July 6, 2020, at Glenpool City Hall, City Council Chambers, 12205 S. Yukon Ave., 3rd Floor, Glenpool, Oklahoma.

AGENDA

Page

A) **Call to Order - Timothy Lee Fox, Chairman**

B) **Roll Call, Declaration of Quorum – Wendy Knight, Secretary; Timothy Lee Fox, Chairman**

C) **Public Works Director Report - Rob Werley**

1) GUSA PW report June 2020 — 2 - 3

D) **Scheduled Business**

1) Discussion and possible action to approve minutes from June, 1, 2020, and June 15, 2020 meetings. — 4 - 12
(Wendy Knight, Secretary)
GUSA - 01 Jun 2020 - Minutes - Html
GUSA - 15 Jun 2020 - Minutes - Html

2) Discussion and possible action to approve Budget Amendment GUSA-1 for FY19-20. — 13 - 14
(David Tillotson, City Manager)
Staff Report - Budget Amendment.GUSA.FYE20
Budget Amendment GUSA1.FYE2020

3) Discussion and possible action to approve a quote for a sewer line relocation from Bret Barnhart Excavating in the total amount of $27,050.00, to be funded from the FY 2020/2021 Annual Budget under Item No. 02 6-16-6278: Sewer Improvements, and to authorize the City Manager to execute the same. — 15 - 30
(Lynn Burrow, Community Development Director)
GUSA Presentation 07 06 20 Rolling Meadows Sewer Relocation

E) **Adjournment**

This notice and agenda was posted at Glenpool City Hall, 12205 S. Yukon Ave., Glenpool, Oklahoma, on July 2, 2020, by 4:00 pm.
Signed: Wendy Knight
Secretary

City Of Glenpool
Creating Opportunity

6 July 2020

To: Honorable Chairman and Trustee's, Glenpool Utility Service Authority

From: Rob Werley, Public Works Director

RE: June 2020 Public Works Operations Report

The following information is a summary of the work that is in progress or has been completed by Public Works crews for the month of June:

Wastewater:

- WET test sampling results were received. All results were in compliance and reported to the DEQ
- 2 sewer calls, both issues were on private lines, jetted mains to ensure no problems on City side
- TV inspected 1 sewer main, found roots in main but they were not causing any type of stoppage, treated roots with foaming root treatment.
- Raised 3 manhole lids that were low
- Repaired one manhole riser

Water:

- Meter reading started on 1 June and ended on 4 June; 12 re-reads were completed
- Cutoffs at the time of this report numbered between 280 – 300 customers
- 148 service orders were completed for the Water Department
- 286 locates were completed
- Monthly bac-t samples were taken, all samples passed
- Made 15 new residential taps, ran service lines, set meters and meter boxes
- Made 2 new commercial taps, ran service lines, set meters and meter boxes
- Made a repair to an 8" water main in Brookover Corner
- Repaired 5 service line leaks
- Had 1 hydrant repaired in Brookover Corner that was still under warranty

Parks:

- Daily check of parks, pick up trash and empty trash cans
- Mow, weed eat at City Parks
- Service and clean mowers and weed eaters
- Installed / removed "City Wide Garage Sale" sign on retaining wall at TCC Bldg

- Weeded and cleaned out flower beds at the Senior Center, Public Safety building, and the Welcome to City of Glenpool sign areas.

Streets:

- Assist Glenpool Public Schools with their food for family drive by offloading a tractor trailer with our skid steer with forklift attachment on June 8th and June 22nd
- Assist with City's food for family drive at City Hall by offloading a tractor trailer with our skid steer with forklift attachment; place out barricades / remove barricades after event.
- Mow, weed eat City right of ways
- Service and clean mowers and weed eaters
- Removed tree limbs from ROW on Elwood between 132nd and 131st
- Repaired street on Carriage Ct.
- Repaired potholes on Warrior Rd. by the Sports Arena, Hickory St, E 131st, Nyssa Pl., and Oak St
- Repaired and or replaced 4 stop signs

Traffic loop repairs were completed to the traffic light at 141st and Warrior Rd

MINUTES
GUSA Meeting
Monday, June 1, 2020 Council Chambers 6:00 PM

TRUSTEES PRESENT:
Tim Fox
Momodou Ceesay
Joyce Calvert
Jacqueline Triplett-Lund
Brandon Kearns

STAFF PRESENT:
David Tillotson
Susan White
Lowell Peterson
Wendy Knight
John Gonsalves
Lynn Burrow
Jim Martin

A) Call to Order - Timothy Lee Fox, Chairman
Chairman Fox called the meeting to order at 8:35 p.m.

B) Roll Call, Declaration of Quorum – Wendy Knight, Secretary; Timothy Lee Fox, Chairman
Wendy Knight called the roll, Chairman Fox declared a quorum present.

C) Public Works Director Report - Rob Werley

GUSA PW report May 2020

D) Scheduled Business

1) Discussion and possible action to approve minutes from May 4, 2020, and May 18, 2020 meetings.
(Wendy Knight, Secretary)

Moved by Jacqueline Triplett-Lund, seconded by Joyce Calvert

To approve the minutes as presented.

	For	Against	Abstained	Absent
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

GUSA - 04 May 2020 - Minutes - Html
GUSA - 18 May 2020 - Minutes - Html

2) Discussion and possible action to ratify action taken by the Glenpool City Council to adopt Resolution No. 2020005, as it pertains to the FY2020-2021 Annual Budget of the Glenpool Utility Services Authority. (John Gonsalves, Finance Director)

Mr. Gonsalves recommended Board action to ratify action taken by the Glenpool City Council to adopt Resolution No. 2020005, as it pertains to the FY2020-2021 Annual Budget of the Glenpool Utility Services Authority.

Moved by Jacqueline Triplett-Lund, seconded by Brandon Kearns

To ratify action taken by the Glenpool City Council to adopt Resolution No. 2020005, as it pertains to the FY2020-2021 Annual Budget of the Glenpool Utility Services Authority.

	For	Against	Abstained	Absent
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

2020-2021 Budget Adoption
PROPOSED FY20-21 BUDGET

3) Discussion and possible action to approve FY20-21 Property, General Liability and Workers Compensation insurance renewals from Oklahoma Municipal Assurance Group.

(John Gonsalves, Finance Director)

Mr. Gonsalves recommended Board approval of FY20-21 Property, General Liability and Workers Compensation insurance renewals from Oklahoma Municipal Assurance Group.

Moved by Jacqueline Triplett-Lund, seconded by Joyce Calvert

To approve FY20-21 Property, General Liability and Workers Compensation insurance renewals from Oklahoma Municipal Assurance Group.

	For	**Against**	**Abstained**	**Absent**
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

INSURANCE RENEWAL 2020-2021

4) Discussion and possible action to approve the Professional Services Agreement with Tetra Tech, Inc. in a total amount not to exceed $224,000.00 to be funded from the FY 2019/2020 GUSA Budget Acct. No.02-6-16- 6244 Professional Services, and to authorize the City Manager to execute same.
(Lynn Burrow, Community Development Director)

Mr. Burrow presented and recommended Board approval of the Professional Services Agreement with Tetra Tech, Inc. in a total amount not to exceed $224,000.00 to be funded from the FY 2019/2020 GUSA Budget Acct. No.02-6-16- 6244 Professional Services. This agreement covers the various research and coordination tasks involved with the development of a formal engineering study to be issued to ODEQ as specified in the attached Amended Consent Order that covers a series of sanitary sewer treatment plant Discharge Permit violations that have occurred over the winter months from approximately fall of 2015 to February, 2020.

Moved by Jacqueline Triplett-Lund, seconded by Joyce Calvert

To approve the Professional Services Agreement with Tetra Tech, Inc. in a total amount not to exceed $224,000.00 to be funded from the FY

2019/2020 GUSA Budget Acct. No.02-6-16- 6244 Professional Services, and to authorize the City Manager to execute same.

	For	Against	Abstained	Absent
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

GUSA Presentation 06 01 20 Tetra Tech Contract Addendum

5) Discussion and possible action to approve and authorize the Chairman of the Board of Trustees to sign the Agreed Upon Audit Procedures Engagement Letter for FY2020, Elfrink and Associates, PLLC, on behalf of the Glenpool Utility Service Authority.
(Lowell Peterson, City Attorney)

Mr. Peterson recommended Board approval of of the Agreed Upon Audit Procedures Engagement Letter for FY2020, Elfrink and Associates, PLLC, on behalf of the Glenpool Utility Service Authority. In the Settlement Agreement that terminated the litigation between the City of Glenpool and the Glenpool Utility Service Authority (together “Glenpool”) and Creek County Rural Water District #2 (“Creek-2”) in May of 2015, Glenpool proposed, and Creek-2 accepted, a methodology for minimizing and hopefully preventing any future disputes or claims based on multiple years of real or perceived non-compliance by either party. The parties agreed to retain, annually, an independent auditor who will examine all pertinent records and accounts to determine whether the parties have met their respective reporting and payment obligations during the “Auditable Period” under review. Auditable Period has been defined, to conform to the parties’ fiscal years, as the 12-month period from July 1 - June 30 of each year of the Agreement.

Moved by Momodou Ceesay, seconded by Joyce Calvert

To approve and authorize the Chairman of the Board of Trustees to sign the Agreed Upon Audit Procedures Engagement Letter for FY2020, Elfrink and Associates, PLLC, on behalf of the Glenpool Utility Service Authority.

	For	Against	Abstained	Absent
Tim Fox	x			

Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

Staff Memo 060120 Audit
Glenpool-Creek2 AUP Engagement Letter (003)

6) Discussion and possible action to enter into Executive Session for the purpose of confidential communications between the GUSA Board of Trustees, as a public body, and its attorney concerning a pending claim upon its determination, with the advice of the Authority Counsel, that disclosure will seriously impair the ability of the Board to process the claim in the public interest, pursuant to 25 O.S. § 307.B.4. (Open Meeting Act); to wit, receipt of Amended Consent Order from the Oklahoma Department of Environmental Quality alleging wastewater treatment plant permit violations.
(Timothy Fox, Chairman)

This item was stricken from the agenda.

7) Discussion and possible action to reconvene in Regular Session.
(Timothy Fox, Chairman)

This item was stricken from the agenda.

E) Adjournment

Chairman Fox declared the meeting adjourned at 9:11 p.m.

MINUTES
Special GUSA Meeting
Monday, June 15, 2020 Council Chambers 6:00 PM

TRUSTEES PRESENT: Tim Fox
Momodou Ceesay
Joyce Calvert
Jacqueline Triplett-Lund
Brandon Kearns

STAFF PRESENT: David Tillotson
Susan White
Lowell Peterson
Wendy Knight
John Gonsalves
Lynn Burrow
Jim Martin

A) Call to Order - Timothy Lee Fox, Chairman
Chairman Fox called the meeting to order at 7:37 p.m.

B) Roll Call, Declaration of Quorum – Wendy Knight, Secretary; Timothy Lee Fox, Chairman
Wendy Knight called the roll, Chairman Fox declared a quorum present.

C) Scheduled Business

1) Discussion and possible action to adopt Joint Resolution No. 2020007 of the City of Glenpool and the Glenpool Utility Services Authority, Resolution Authorizing The City Of Glenpool And The Glenpool Utility Services Authority To Renew That Certain Security Agreement By And Between The City Of Glenpool And The Glenpool Utility Services Authority With Respect To The Issuance Of The Glenpool Utility Services Authority Utility System Revenue Bonds, Taxable Refunding Series 2019, Dated As Of September 1, 2019.
(John Gonsalves, Finance Director)

Mr. Tillotson recommended Board approval of Joint Resolution No.

2020007 of the City of Glenpool and the Glenpool Utility Services Authority, Resolution Authorizing The City Of Glenpool And The Glenpool Utility Services Authority To Renew That Certain Security Agreement By And Between The City Of Glenpool And The Glenpool Utility Services Authority With Respect To The Issuance Of The Glenpool Utility Services Authority Utility System Revenue Bonds, Taxable Refunding Series 2019, Dated As Of September 1, 2019, as previously approved by City Council.

Moved by Jacqueline Triplett-Lund, seconded by Joyce Calvert

To adopt Joint Resolution No. 2020007 of the City of Glenpool and the Glenpool Utility Services Authority, Resolution Authorizing The City Of Glenpool And The Glenpool Utility Services Authority To Renew That Certain Security Agreement By And Between The City Of Glenpool And The Glenpool Utility Services Authority With Respect To The Issuance Of The Glenpool Utility Services Authority Utility System Revenue Bonds, Taxable Refunding Series 2019, Dated As Of September 1, 2019.

	For	**Against**	**Abstained**	**Absent**
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

Staff Memo re Renewal of 2019 Security Agreement 060120
2020 RESOLUTION for Renewal of 2019 Security Agreement

2) Discussion and possible action to approve acceptance of an Amended Consent Order issued by the Oklahoma Department of Environmental Quality.
(Lynn Burrow, Community Development Director)

Mr. Burrow presented and recommended Board approval of an Amended Consent Order issued by the Oklahoma Department of Environmental Quality. The amended order is in response to the proposed Supplemental Environmental Project (SEP) that was developed and issued to ODEQ as an official response to the initial Order sent to GUSA in February.

Moved by Jacqueline Triplett-Lund, seconded by Momodou Ceesay

To approve acceptance of an Amended Consent Order issued by the Oklahoma Department of Environmental Quality.

	For	Against	Abstained	Absent
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

Acceptance of ODEQ Amended Consent Order

3) Discussion and possible action to approve two (2) quotes from Evans Enterprises in an amount not to exceed $11,940.00 to be funded from the FY19/20 budget account no. 02-6-16-6272; Equipment Repair. (Lynn Burrow, Community Development Director)

Mr. Burrow presented and recommended Board approval of two (2) quotes from Evans Enterprises in an amount not to exceed $11,940.00 to be funded from the FY19/20 budget account no. 02-6-16-6272; Equipment Repair. The proposal covers necessary repairs involving two separate sewerage liftstation pumps, one located at Eden South Addition and one serving the Expo Logistics trucking depot. Both liftstations are currently operating on only one pump and the repair work in question is critical to the continued daily operation of both liftstations.

Moved by Momodou Ceesay, seconded by Joyce Calvert

To approve two (2) quotes from Evans Enterprises in an amount not to exceed $11,940.00 to be funded from the FY19/20 budget account no. 02-6-16-6272; Equipment Repair.

	For	Against	Abstained	Absent
Tim Fox	x			
Momodou Ceesay	x			
Joyce Calvert	x			
Jacqueline Triplett-Lund	x			
Brandon Kearns	x			
	5	0	0	0

CARRIED.

GUSA Presentation 06 15 20 Pump Repair

D) Adjournment

Chairman Fox declared the meeting adjourned at 7:49 p.m.

City Of Glenpool
Creating Opportunity

To: Chairman and Trustees

From: David Tillotson, City Manager

Date: July 2, 2020

Re: FY19-20 GUSA Budget Amendment

Background:

As part of the end of the year tasks on the budget we have several budget amendments and transfers that need to be completed in various funds. The attached budget amendment is needed to cover the costs associated with the Board's approval of the Professional Services Agreement with Tetra Tech, Inc. for $236,700.00. As you may remember this agreement was approved previously to cover engineering work associated with the DEQ Consent Order on the sewer lagoon. This amendment increases the revenue account (Transfer from Fund Balance) and the expense account (Engineering Fees) by the amount of the contract.

Staff Recommendation:

- Staff recommends approval of Budget Amendment Form GUSA-1.

Attachments:

- Budget Amendment Form GUSA-1

City of Glenpool
Budget Amendment

Fiscal Year: 2019-2020
Amendment No: GUSA-1
Date Requested: 30-Jun-20

Revenue:

Fund	Account Number	Acct Name	Amount	New Budget Amount
2	02-5-00-5409	Transfer In Fund Balance	$ 236,700.00	$ 286,126.00

Expense:

Fund	Account Number	Acct Name	Amount	New Budget Amount
2	02-6-16-6244	Engineering Fees	$ 236,700.00	$ 246,700.00

Approved by the Glenpool Utility Services Authority:

Chair **Date**

City Of Glenpool

Creating Opportunity

MEMORANDUM

TO: TIM FOX - BOARD CHAIRMAN
GLENPOOL UTILITY SERVICES AUTHORITY

FROM: LYNN BURROW, PE
COMMUNITY DEVELOPMENT DIRECTOR

RE: REVIEW AND APPROVAL – CONSTRUCTION PROPOSAL
SANITARY SEWER RELOCATION – ROLLING MEADOWS ADDITION

DATE: JULY 6, 2020

BACKGROUND

This item is for Board review and approval regarding a certain construction proposal received from Bret Barnes Excavating Company in the amount of $27,050.00 covering a sanitary sewer mainline relocation. The proposed project is detailed on the attached construction documents prepared to address the need to relocate a section of an existing 8" ID sanitary sewer main located along the north boundary of Rolling Meadows Addition. The need for this work arises out of the fact that the existing sewer main has been damaged by work done sometime in the past in an effort undertaken by an adjacent homeowner to address a foundation failure on the residential structure located at 14603 South Xenophon Ave. The property is currently owned by Mr. Brandon Worley.

Sometime prior to the purchase of the property by this current owner, a foundation repair was performed on a corner of the home that was built in 1980 over the existing sewer main and encroaching onto the platted Utility Easement as illustrated in the attached site survey and photo. The current homeowner alerted our Public Works Department of this issue due to the creation of a major sinkhole that formed under the portion of the foundation that was repaired at some point in the past by one of the previous owners. The creation of this sinkhole is likely due to the damage done to the sewer line by drilling steel foundation support piers either through the existing line or close enough to it to cause the mainline to crack, leak fluid, and let soil enter into line to be washed downstream. The Public Works Department efforts to probe the line with a jet rod tool and a TV camera have not been successful due to blockage and highwater levels in the line which indicates the main has likely been pierced. Having investigated the situation thoroughly, City Staff has prepared the attached construction document that details the proposed relocation necessary to route around the damaged section of mainline under the residence and abandon the damaged section.as indicated on the plans.

The homeowner will then be in position to refill and recompact the existing void under the house foundation in an effort to prevent future foundation settlement.

Staff Recommendation:

Staff has reviewed the attached construction quotes covering this sewer line relocation and recommends Board approval to award the work to Bret Barnhart Excavating in the total amount of $27,050.00 and to authorize the City Manager to execute the same. Funding for this project is to be from the FY 2020/2021 Annual Budget under Item No. 02 6-16-6278: Sewer Improvements

Attachments:

A. Existing Condition Site Survey
B. Proposed Sewer line Construction Documents
C. Construction Proposal - Bret Barnhart Excavating
D. Construction Proposal - Morton Construction & Consulting

bret barnhart
EXCAVATING
700 Commercial Ave, Mounds, OK 74047
Phone: 918.827.6005
www.BarnhartExcavating.com

PROPOSAL

Proposal For:
CITY OF GLENPOOL – ROLLING MEADOWS SANITARY RELOCATE

Date:
06/26/2020

JOB	ESTIMATE NUMBER	ESTIMATOR
CITY OF GLENPOOL ROLLING MEADOWS	20-090	JOHN MOZINGO

BIDITEM CODE	DESCRIPTION	QUAN	UNIT	UNIT PRICE	EXT PRICE
10	MOBILIZATION	1.000	LS	$2,850.00	$2,850.00
100	TREE REMOVAL	3,500.000	SQFT	$ 1.00	$3,500.00
300	FINAL GRADE	1,500.000	SQFT	$ 2.00	$3,000.00
600	8" SDR 35 OPEN CUT 6-8	145.000	LF	$ 60.00	$8,700.00
610	INSTALL SANITARY STRUCTURES	3.000	EA	$3,000.00	$9,000.00
				TOTAL:	**$27,050.00**

GENERAL NOTES:

1. No Permits, Deposits, Bonds, Fees of any kind (Bond Rate determined per job).
2. No De-Watering of any kind.
3. No Compaction Testing of any kind.
4. Contractor shall notify Subcontractor in writing within 5 (five) working days of a move in and commence of his work for each phase.
5. Any delays due to mistakes in plans or Engineer's staking will be charged to the Owner.
6. Payment shall be made in a timely manner. Progress Billing will be submitted to the Owner by the 25th of the month and must be paid by the 15th day following. All late payments will be subject to interest charges at the rate of 18% per annual compounded monthly.
7. If excessive rock is found and additional equipment is needed, there will be an hourly charge for any and all equipment, operators, and material needed to remove rock. Any and all added cost associated with the removal of the rock will be charged to the Customer. Customer will be notified before any additional costs are charged.
8. ONLY CLEARING MINIMAL TREES FOR THE PIPE AND ACCESS
9. THE TREES THAT ARE IN THE FENCE LINE TO REMAIN.

EXCLUSIONS:

1. Layout of building corners (survey).
2. Establishment of bench-mark for reference purpose.
3. Time delays caused by inclement weather.
4. Soil compaction test.
5. DAMAGE TO FENCE LINE
6. DAMAGE TO REMAINING TREES
7. DAMAGE TO DRIVEWAYS

FUEL CONTINGENCY:

Due to the rising cost of fuel, prices listed
are only good for one week after bid date.
Prices may vary according to current fuel prices.

PROPOSAL

Lot 11, Block 9 Rolling Meadows Addn

Sanitary Sewer Line Relocation

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
Sanitary Sewer Line					
	Clearing & Grubbing	1	LS	$ 7,500.00	$ 7,500.00
	8" Sewer Main (SDR-35)	145	LF	$ 60.00	$ 8,700.00
	4' ID Manhole	3	EA	$ 2,800.00	$ 8,400.00
	Tie-In to Ex Manhole	1	EA	$ 7,800.00	$ 7,800.00
Subtotal Sanitary Sewer					**$ 32,400.00**

Submitted by

Brandon Morton 6-23-2020

MORTON CONSTRUCTION & CONSULTING

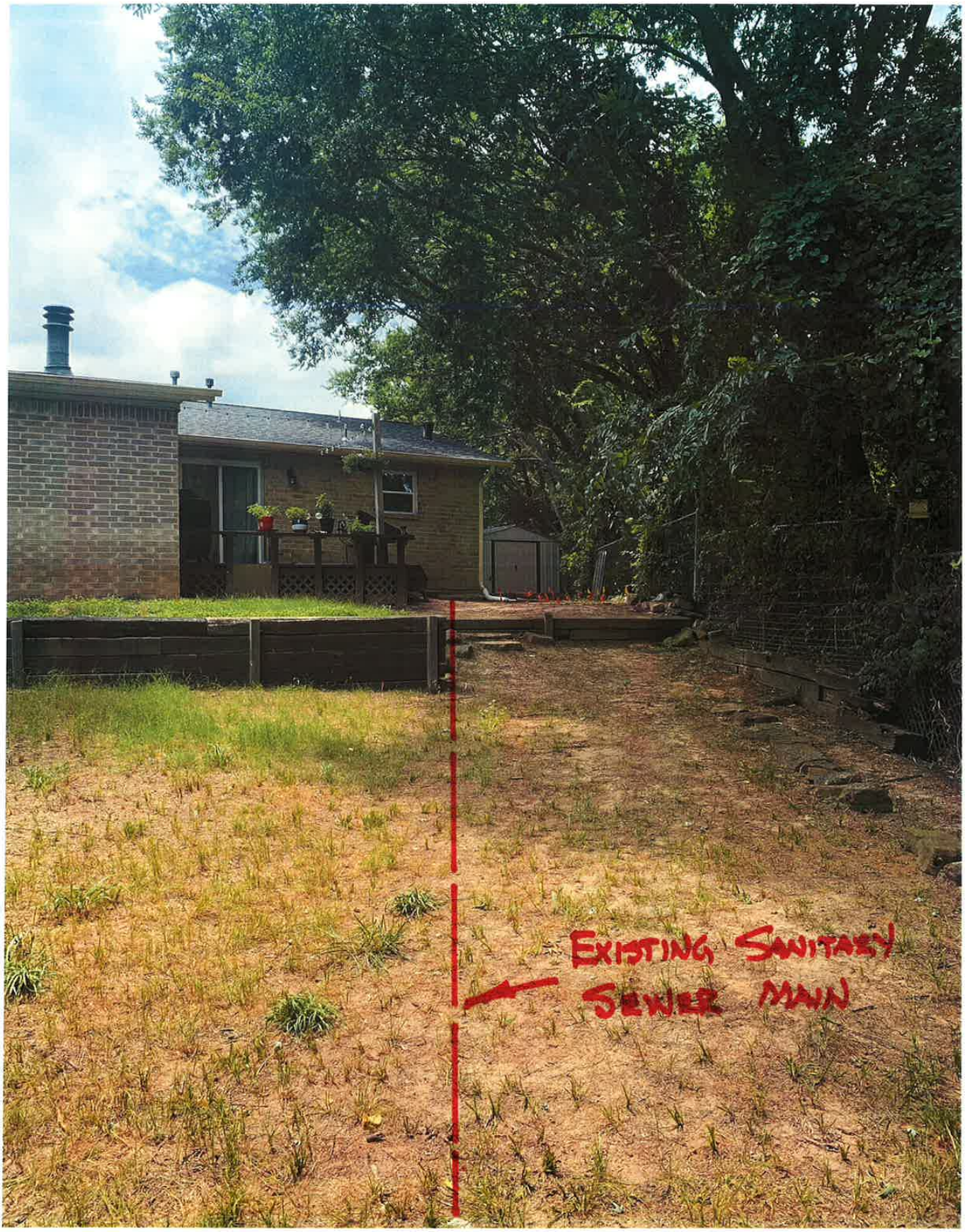
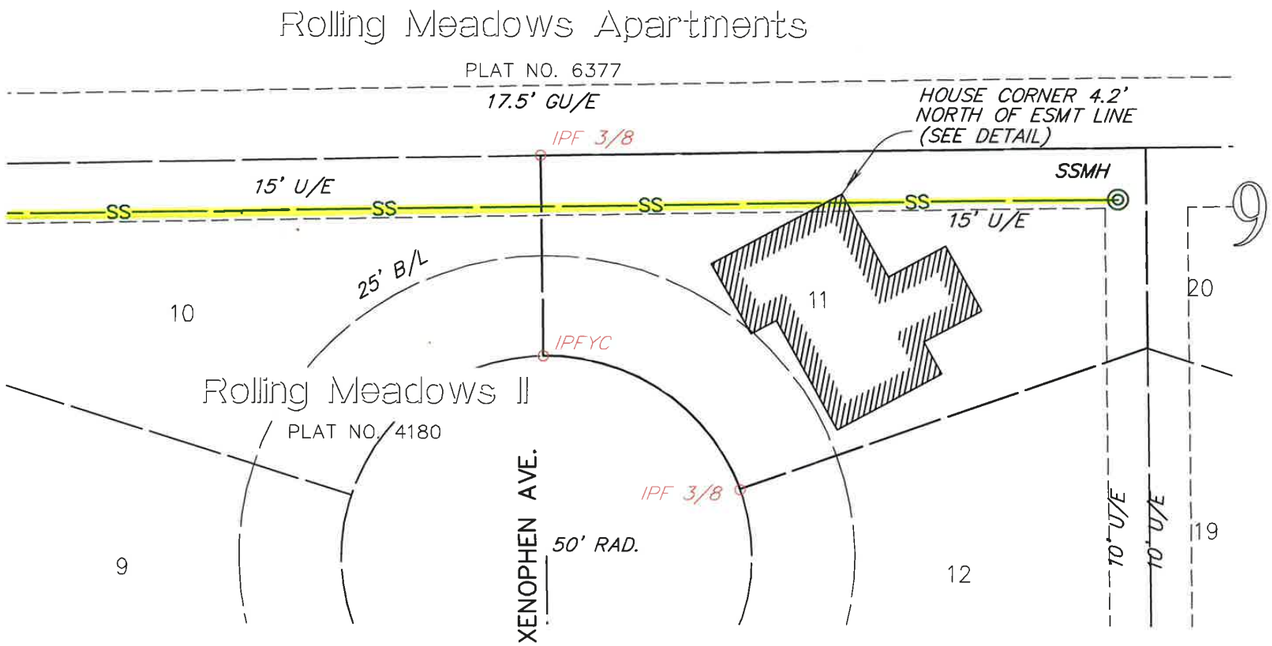
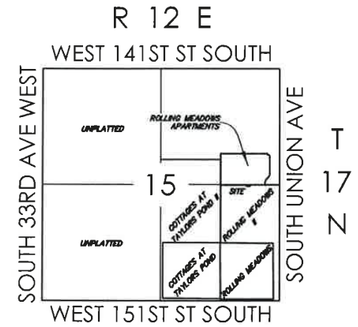

EXISTING SANITARY
SEWER MAIN

Exhibit "A"

Rolling Meadows II, Lot 11, Block 9

Sewer As-Built Exhibit

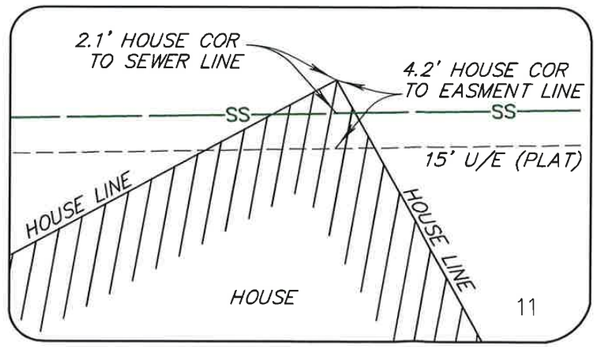




Location Map

NORTH
1" = 40'

DETAIL 1" = 10'



LEGEND

B/L	BUILDING LINE
RAD	RADIUS
U/E	UTILITY EASEMENT

04/24/2020 RMCGILL 20044SVBS

THE ILLUSTRATION SHOWN HEREON IS INTENDED TO DEPICT AN AS-BUILT OF AN EXISTING SANITARY SEWER LINE AND DOES NOT REPRESENT A LAND OR BOUNDARY SURVEY PLAT AS DEFINED BY THE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS FOR THE STATE OF OKLAHOMA.

Tanner Consulting LLC
5323 SOUTH LEWIS AVENUE, TULSA OKLAHOMA 74105-6539 | 918.745.9929

Exhibit "A"

Rolling Meadows II, Lot 11, Block 9

Sewer As-Built Exhibit

R 12 E

WEST 141ST ST SOUTH

SOUTH 33RD AVE WEST

SOUTH UNION AVE

T 17 N

15

UNPLATTED

ROLLING MEADOWS APARTMENTS

UNPLATTED

WEST 151ST ST SOUTH

Location Map

Benchmark

3/8" IRON PIN FOUND AT THE MOST SOUTHERLY SW LOT CORNER OF LOT 11, BLOCK 9.
(352436.69N, 2556116.80E)

ELEVATION = 717.84 (NAVD 88)

NORTH
1" = 20'

Rolling Meadows Apartments
PLAT NO. 6377

17.5' GU/E

28"TREE

13"TREE

16"TREE

32"TREE

18"TREE

19"TREE

17"TREE

12"TREE

GM

IPF 3/8

HOUSE CORNER 4.2' NORTH OF ESMT LINE

714.80TW
713.55BW

715.24TW
713.73BW

714.47TW
713.33BW

714.67TW
711.52BW

714.46TW
712.17BW

UC

SS

SHED

A/C

WALL

EPED

CPED

XFMR

SSMH
715.08TR
709.34FL–IN S
706.24FL–OUT E

295.06'

15' U/E

SSMH
709.54TR
704.23FL+IN S
703.82FL–OUT E

10

11

9

20

25' B/L

EXISTING HOUSE

IPFYC

10' U/E

10' U/E

XENOPHEN AVE.

50' RAD.

IPF 3/8

9

Rolling Meadows II
PLAT NO. 4180

12

LEGEND

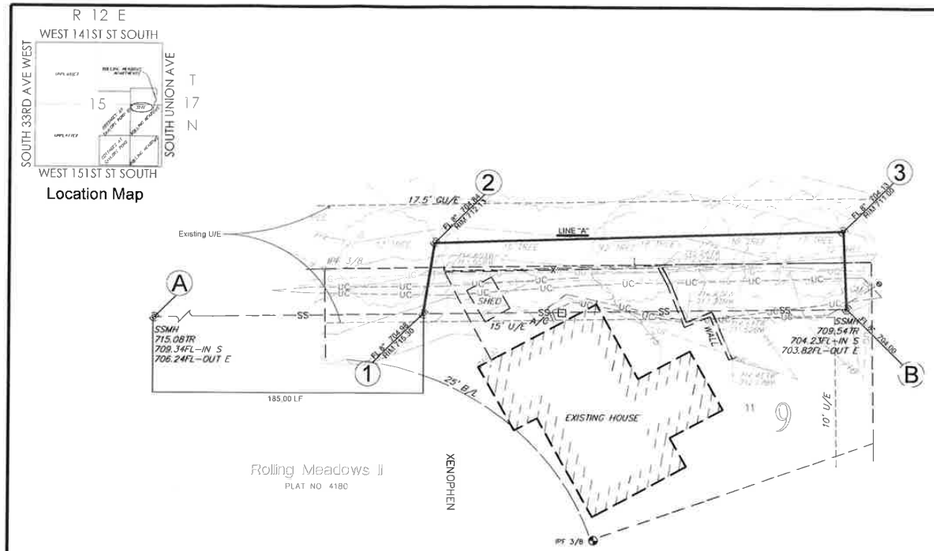
A/C	AIR CONDITIONER
B/L	BUILDING LINE
BW	BOTTOM OF WALL
CPED	CABLE PEDESTAL
ESMT	EASEMENT
GU/E	GENERAL UTILITY EASEMENT
RAD	RADIUS
SSMH	SANITARY SEWER MANHOLE
TPED	TELEPHONE PEDESTAL
TW	TOP OF WALL
U/E	UTILITY EASEMENT
UC	UNDERGROUND CABLE
UE	UNDERGROUND ELECTRIC
UG	UNDERGROUND GAS
XFMR	TRANSFORMER

6/02/2020 20044EX_ASBUILT

THE ILLUSTRATION SHOWN HEREON IS INTENDED TO DEPICT AN AS-BUILT OF AN EXISTING SANITARY SEWER LINE AND DOES NOT REPRESENT A LAND OR BOUNDARY SURVEY PLAT AS DEFINED BY THE BOARD OF LICENSURE FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS FOR THE STATE OF OKLAHOMA.

Tanner Consulting LLC
5323 SOUTH LEWIS AVENUE, TULSA OKLAHOMA 74105-6539 | 918.745.9929

P:\2020\20044\EXHIBITS\20044EX_ASBUILT.DWG, EXHIBIT LANDSCAPE, 6/2/2020 1:30:04 PM, TBUSH, I:I, TANNER CONSULTING, LLC, OK CA 2661 EXP 6/30/2021



Benchmark

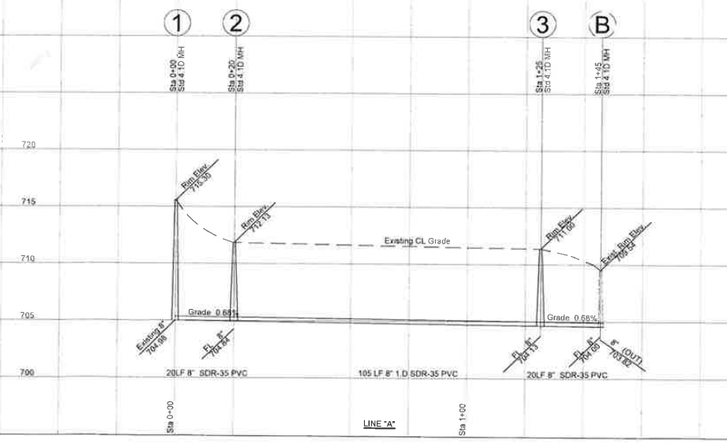
3/8" IRON PIN FOUND AT THE MOST
SOUTHERLY SW LOT CORNER OF LOT 11 BLOCK 9.
(352436.69N, 2556116.80E)

ELEVATION = 717.84 (NAV 88)

NORTH

Legend

A/C	AIR CONDITIONER
B/L	BUILDING LINE
BW	BOTTOM OF WALL
CPED	CABLE PEDESTAL
ESMT	EASEMENT
GU/E	GENERAL UTILITY EASEMENT
RAD	RADIUS
SSMH	SANITARY SEWER MANHOLE
TPED	TELEPHONE PEDESTAL
TW	TOP OF WALL
U/E	UTILITY EASEMENT
UC	UNDERGROUND CABLE
UG	UNDERGROUND GAS
UE	UNDERGROUND ELECTRIC
XFMR	TRANSFORMER



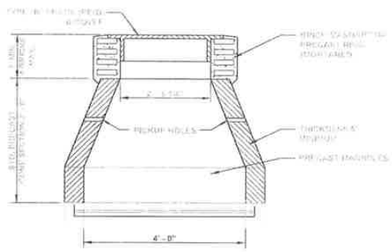
Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Public Sanitary Sewer
City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

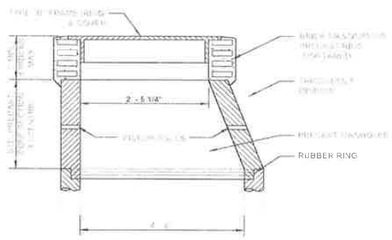
REVISION	BY	DATE

PLAN SCALE	DRAWN	CP	APPROVED
1" = 20'	DESIGNED	JS	
	OFFICE ENGR.	J.S	
PROFILE SCALE	CHIEF ENGR.	J.S	
HORIZONTAL 1" = 20'	RECOMMENDED DIRECTOR		
VERTICAL 1" = 5'	RECOMMENDED ENGINEERING DIRECTOR		CITY ENGINEERING DEPT.
ATLAS PAGE NO			DATE
			SHEET 2 OF 2

STANDARD DETAIL FOR 4' DIA. CONES

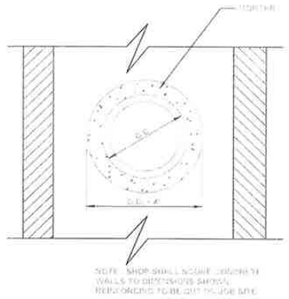


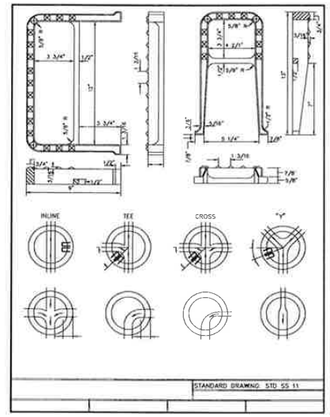
CONCENTRIC CONE

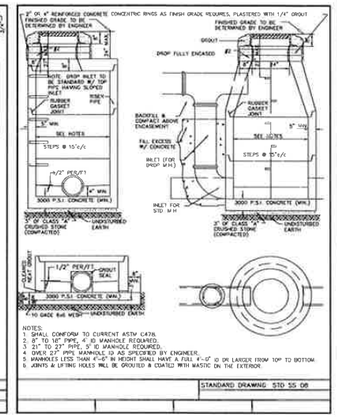


ECCENTRIC CONE

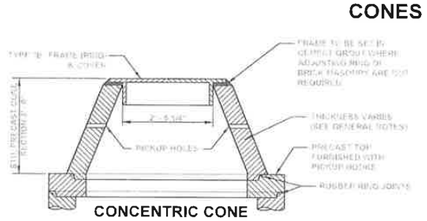
ABOVE INVERT PIPE CONNECTION







STANDARD DETAIL FOR LARGER THAN 4' DIA. CONES



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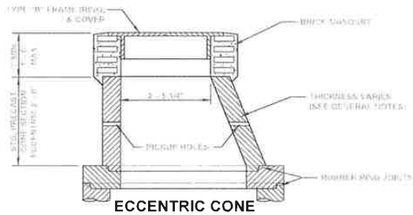
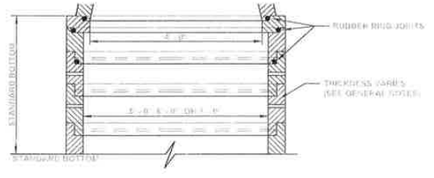
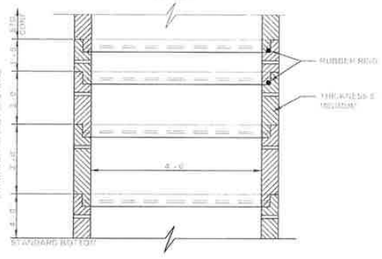


ECCENTRIC CONE

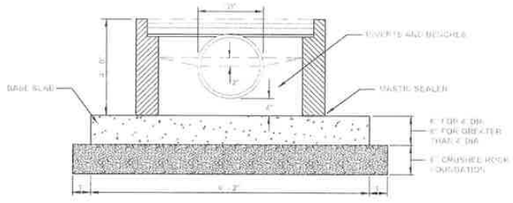
STANDARD FOR LARGER THAN 4' DIA. MANHOLE WALL



STANDARD DETAIL FOR 4' DIA. MANHOLE WALL

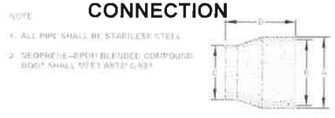


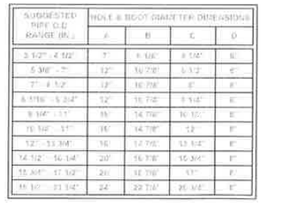
MANHOLE BASE SECTIONS

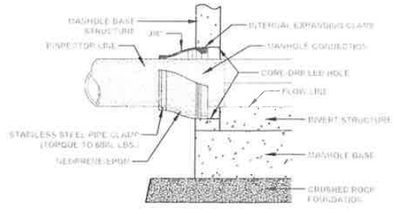


BASE RISER SECTION WITH MASTIC SEALER OPTION "A"

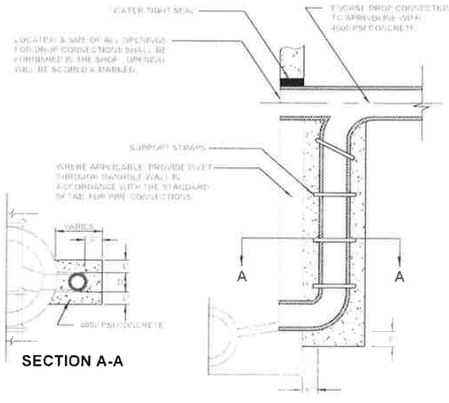
MANHOLE-PIPE CONNECTION



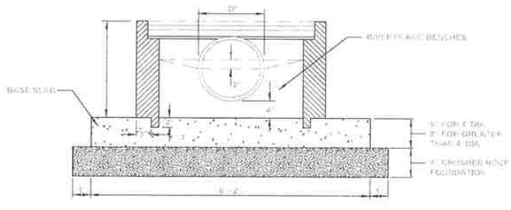




MANHOLE DROP CONNECTION



SECTION A-A



BASE RISER SECTION WITH PREFORMED SOCKET OPTION "B"

Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Sanitary Sewer Details

City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: NTS
HORIZONTAL
VERTICAL

DRAWN | APPROVED
DESIGNED
OFFICE ENGR.
CHIEF ENGR.
RECOMMENDED DIRECTOR
RECOMMENDED | CITY ENGINEERING DEPT
ENGINEERING DIRECTOR | DATE
ATLAS PAGE NO.
SHEET 2 OF 6

GENERAL NOTES
FRAME (RING) & COVER

1. GENERAL -- Cast iron rings, tops, covers, grating and all cast iron fittings shall be sound, true to form and thickness, and neatly finished and shall be rejected if a satisfactory number. Castings shall be clean, uniform and shall without blow or sand holes, through holes, shrinkage distortion or any other surface defects, which would impair serviceability. Casting surfaces shall be smooth and reclaimed by shot blasting or other approved cleaning method. Plugging or filling holes, or other defects shall not be permitted. Parting fins and pouring gates shall be removed. Sharp edges resulting from fabrication shall be dulled by acceptable method to ensure safety in handling. Casting shall conform to the requirements of the Standard Specification for Grey Iron Castings, ASTM A-48, Class "30 B" for rings and "35 B" for covers, and be approved Standard Details for Manhole Rings and Covers.

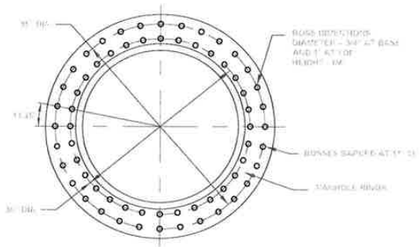
   All rings and covers shall be accurately and carefully placed. All rings shall be treaded in a substantial layer of mortar, shall have a full bearing and shall be set to the exact grade. Unless other wise shown, top of covers, shall be flush with or slightly above the surrounding surface. When each cover is placed in any position on the ring, the side play shall not exceed one-eighth (1/8") inch in any direction.

2. RINGS -- Rings may be manufactured in accordance with the Standard Detail for Reversible Manhole Rings.

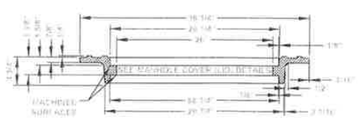
3. COVERS --
   A. GENERAL -- Manhole covers may be manufactured in accordance with the appropriate Standard Details for Vented or Non-Vented Covers.
   B. COATING -- When called for on the plans or specified, the underside of all manhole covers shall be given one (1) coat of asphalt varnish after visual inspection and approval on the job site.
   C. APPLICATION -- All lids (covers) in street right-of-way shall be non-vented.
4. CASTING WEIGHTS -- The average weight of casting will be not less than 95% of weights shown below.

Ring Only	236 LBS.
Cover Only	195 LBS.
Totals	439 LBS

REVERSIBLE MANHOLE FRAME



PLAN



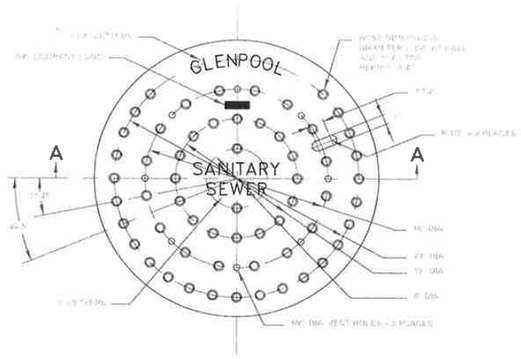
SECTION

AS SHOWN FOR OUT OF PAVING INSTALLATIONS
REVISED FOR IN PAVING INSTALLATIONS

GENERAL NOTES:

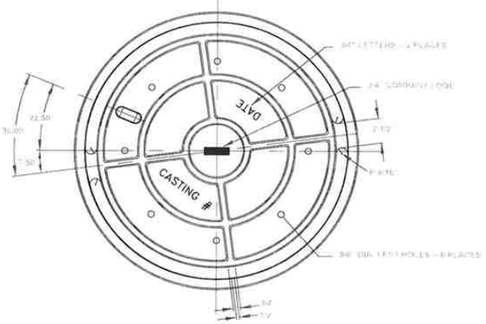
1. FINISH EXCESS IRON AND FINS; MACHINE SEATING SURFACES FLAT TO NOTED DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN, ALL DIMENTIONS ARE IN INCHES.

VENTED MANHOLE COVER (LID)

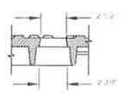


PLAN OF TOP

SECTION A-A



PLAN OF UNDERSIDE

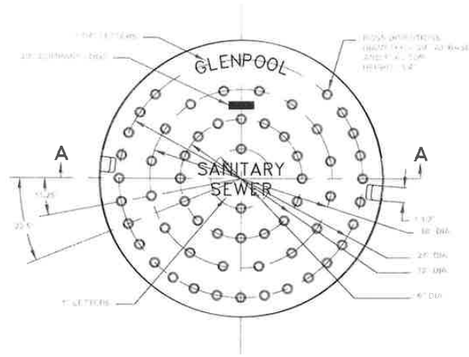


SECTION THRU
PICK SLOT

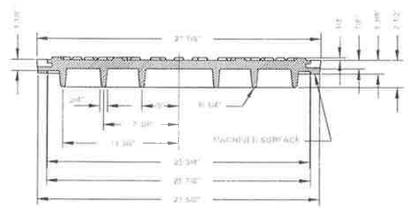
GENERAL NOTES:

1. FINISH EXCESS IRON AND FINS; MACHINE SEATING SURFACES FLAT TO NOTED DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN, ALL DIMENTIONS ARE IN INCHES.

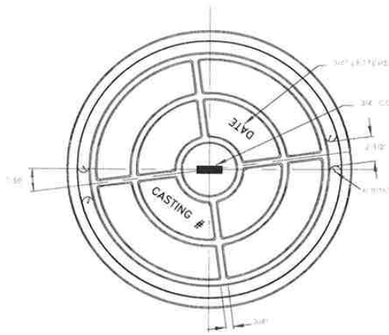
NON-VENTED MANHOLE COVER



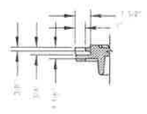
PLAN OF TOP



SECTION A-A



PLAN OF UNDERSIDE



SECTION THRU
PICK SLOT

Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

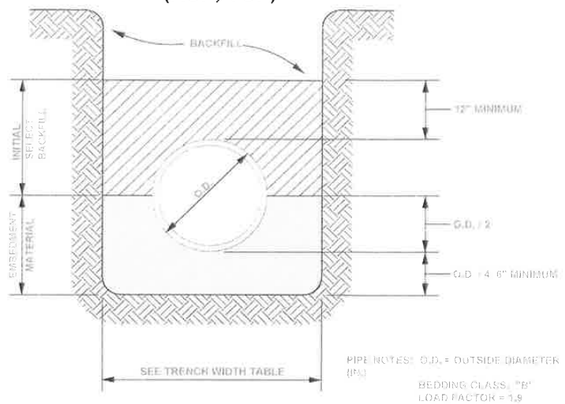
Sanitary Sewer Ring & Lid Details

City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

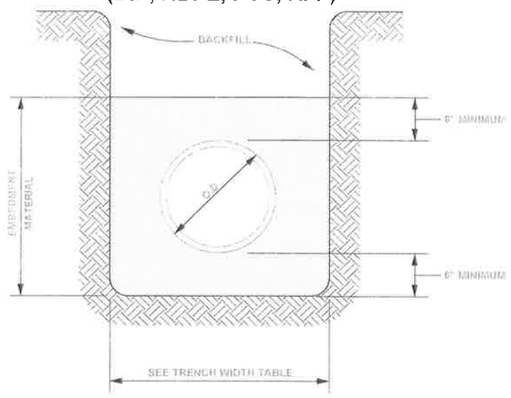
REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: HORIZONTAL NTS, VERTICAL NTS
DRAWN
DESIGNED
OFFICE ENGR
CHIEF ENGR
RECOMMENDED DIRECTOR
RECOMMENDED
ENGINEERING DIRECTOR
APPROVED
CITY ENGINEER/RD DEPT
DATE
ATLAS PAGE NO
SHT 3 OF 8

RIDGED PIPE INSTALLATION (RCP, VCP)



FLEXIBLE PIPE INSTALLATION (DIP, HDPE, PVC, RFP)



REINFORCED CONCRETE PIPE (RCP) MINIMUM PIPE DESIGN

1. HIGHWAYS -- Minimum pipe class for diameter twenty-four (24") inches to one-hundred-two (102") inches meeting the requirements of ASTM C-76 shall be as follows:

MAXIMUM DEPTH OF COVER (feet)	MINIMUM CLASS
10	III
10	III
10	III

For maximum depth of cover of thirty (30') feet, pipes ranging from twenty-four (24") inches to fifty-four (54") inches in diameter shall be designed and manufactured in accordance with ASTM C-655 and shall have the following minimum three-edge bearing strength for 0.01 crack (D 0.01) in pounds per lineal foot of inside diameter.

PIPE NOMINAL SIZE (in.)	$D_{.01}$ (lb./lineal ft. per ft. of inside diameter)
24	3200
27	3050
30	3050
33	3475
36	3475
42	3450
48	3300
54	3125

Pipes ranging in diameter from sixty (60") to one-hundred-two (102") inches in diameter shall be class V for a minimum depth of cover of thirty (30') feet when manufactured in accordance with ASTM C-76.

2. RAILROADS -- Minimum pipe class for E-80 Railroad live load pipe size twenty-four (24") inches to one-hundred-two (102") inches in diameter meeting the requirements of ASTM C-76 or ASTM C-655 shall be as follows:
   a. MAXIMUM DEPTH OF COVER TEN (10') FEET -- Diameters twenty-four (24") inches to one-hundred-two (102") inches shall be Class VI.
   b. MAXIMUM DEPTH OF COVER FIFTEEN (15') FEET -- diameters twenty-four (24") inches to forty-two (42") inches shall be Class V and forty-eight (48") inches to one-hundred-two (102") inches shall be Class VI.
   c. MAXIMUM DEPTH OF COVER TWENTY (20') FEET -- Diameter twenty-four (24") inches to one-hundred-two inches shall be class V.
   d. MAXIMUM DEPTH OF COVER TWENTY-FIVE (925') FEET -- Diameter twenty-four (24") inches shall have D 0.01 of thirty-one-hundred (3100lb./Lft.) pound/lineal foot per foot of inside diameter. Diameters twenty-seven (27") inches to one-hundred-two (102") inches shall be Class V.

PIPE NOMINAL SIZE (in.)	$D_{.01}$ (lb./lineal ft. per ft. of inside diameter)
24	3300
27	3125
30	3150
33	3675
36	3675
42	3550
48	3400
54	3225
60	3100

Diameters sixty-six (66") inches to one-hundred-two (102") inches shall be Class V.

BACKFILLING

1. DESCRIPTION -- Backfill is that portion of the total backfill down to but not including the pipe embedment material. The backfill shall be only material approved by the Engineer consisting of loose earth, free of clods, stones, organic matter, debris, or other objectionable material. All backfilling shall be done in such a manner as not to disturb or injure the pipe or structures over or against which it is being placed. Any pipe or structure injured or moved from its proper line or grade during backfilling operations shall be opened up and repaired then rebackfilled as herein specified.
   The placing of backfill mater shall not begin until approved for so doing has been given by the Engineer, but backfilling about structures or portion of structures shall be done immediately when so ordered by the Engineer. The top surface of all slopes of all backfill shall be neatly graded off where selected topsoil, or sod or other material is removed and piled separately, such material shall be carefully replaced in a manner satisfactory to the Engineer. The top twelve inches of backfill shall be of as good quality as the original topsoil, which is removed.
2. COMPACTING REQUIREMENTS -- All backfill shall be placed and compacted in six (6") inch lifts for hand-tamped equipment and thirty (30") lifts of self-propelled or power driven equipment to the following minimum percent of Standard Proctor Density of Related Density as determined by ASTM D-698 "Test for Moisture-Density Relations of Soil and Soil Aggregate Mixtures", and ASTM D-2049 "Test for Relative Density of Cohesionless Soils", respectively. ASTM Test D-2049 shall be performed on cohesionless (Granular) soils.
   Cohesive backfill material shall reach the indicated compaction levels at plus (+) or minus (-) three (3%) percent of optimum moisture content. The lift thickness shall be reduced, if necessary, to meet the compaction requirements specified herein.

General Location	Percent Compaction (%)	
	Standard Proctor Density (ASTM D-698)	Standard Proctor Density (ASTM D-698)
Under Traffic Area or Improved Existing Surfaces	95	75
Urban & Residential Areas	90	70
Underdeveloped & Other Areas	85	70

3. COMPACTING METHODS -- Compacting methods may vary depending on the materials or as approved by the Engineer.
4. COHESIVE MATERIALS -- Compaction of cohesive materials may be obtained by the use of impact type equipment in confined areas. pneumatic tampers and engine driven rammers may also be used. In relatively narrow trenches, self propelled rammers may also be used. In wide trenches, sheepsfoot rollers may be used.

EMBEDMENT MATERIAL

Embedment is that material to be placed from a minimum of six (6") inches below bottom of the pipe to the springline (half pipe diameter) or to a minimum of six (6") inches above top of pipe for rigid and flexible pipes, respectively. The remaining material to be placed over the embedment is considered backfill.

MATERIAL MATERIAL REQUIREMENTS

1. GENERAL -- Embedment material for all rigid and flexible pipes shall be sand or in areas that is unstable crushed rock meeting the requirement of either ASTM D-2321 Class 1A, or ASTM C-33 Number 67 or 67 and graduations shown below.

Nominal Sieve Size	Percent Passing		
	ASTM D-2321	ASTM C-33	
	Class 1A	Number 67	Number 67
1 1/2 inch	100%	100%	------
1 inch	ASTM D-2321	95 to 100%	100%
3/4 inch	------	------	90 to 100%
1/2 inch	------	25 to 60%	------
3/8 inch	------	------	20 to 55%
Number 4	≤10%	0 to 10%	0 to 10%
Number 8	------	0 to 5%	0 to 5%
Number 200	≤5%	------	------

2. COMPACTION REQUIREMENTS -- All embedment material shall be placed in six (6") inch lefts to the following minimum percent of Standard Proctor Density as determined by ASTM D-698, "Tests for Moisture -- Density Relations of Soils- Aggregate Mixtures", and ASTM D-2049, "Test for Related Density of Cohesionless Soils", respectively.

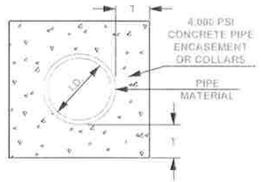
Compaction Test	Compaction Requirement
Standard Proctor Density	95%
Relative Density	75%

3. COMPACTION METHODS -- All embedment material shall be compacted in accordance with the methods described in Part "3" of "Backfilling."

TRENCH WIDTH TABLE

Pipe Nominal Size (inches)	Minimum Trench Width (feet)	Maximum Trench Width (feet)
12	3.00	5.00
15	3.25	5.00
18	3.50	6.00
21	3.75	6.25
24	4.00	6.00
27	4.25	6.25
30	4.50	6.75
33	4.75	8.25
36	5.25	9.00
42	6.25	9.50
48	7.00	11.00
54	8.00	11.50
60	9.00	12.00
66	9.75	13.00
72	10.50	13.00
78	10.50	13.50
84	11.00	14.00
90	11.50	14.50
96	12.00	15.00
102	12.50	15.50

PIPE ENCASEMENT AND COLLARS



NOMINAL DIAMETER (INCHES)	T (INCHES)
≤18"	6"
>18" & <30"	8"
>30" & <42"	10"
≤42"	12"

NOTE: FOR COLLARS, THE CONCRETE ENCASEMENT SHALL BE PLACED TO A MINIMUM OF TWELVE (12") INCHES ON EITHER SIDE OF THE JOINT.

Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Sanitary Sewer Pipe Installation Det.

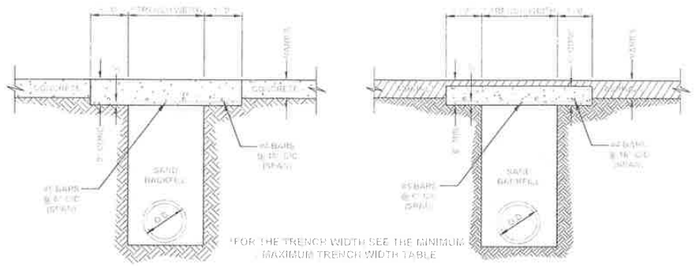
City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: HORIZONTAL NTS, VERTICAL NTS
DRAWN
DESIGNED
OFFICE ENGR
CHIEF ENGR
RECOMMENDED: DIRECTOR
RECOMMENDED: CITY ENGINEERING DEPT
ENGINEERING DIRECTOR
APPROVED
DATE
ATLAS PAGE NO.
SHEET C of E

PAVING CUT AND PERMANENT REPAIR

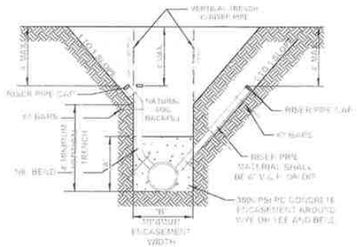
(RIGID PAVEMENT) (FLEXIBLE PAVEMENT)



*FOR THE TRENCH WIDTH SEE THE MINIMUM & MAXIMUM TRENCH WIDTH TABLE

TYPICAL SECTION

SERVICE CONNECTION INSTALLATION



CONCRETE ENCASEMENT FOR RISER PIPE

PIPE SIZE (inches)	"A" (feet)	"B" (feet)	LENGTH OF ENCASEMENT (feet)
6	1.5	2.2	2.0
8	2.0	2.2	2.5
12	2.0	2.2	3.0
15	2.5	2.5	3.5
18	3.0	3.0	4.5

ADD 1.0' TO "B" WHEN USING BRACING OR SHORING

CONNECTION TYPES

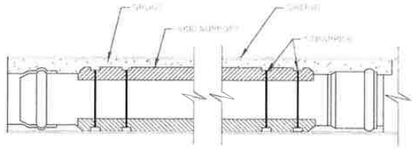
1. EXTERNAL CONNECTIONS FOR NEW CONSTRUCTION WYE BRANCHES -- For new construction there shall be installed wye branches of size and type shown on the plans with six (6") inch openings at locations shown on the plans or as described by the Engineer.

2. EXTERNAL CONNECTION TO EXISTING MAIN -- Connections to existing main may be accomplished as follows:
   a. SADDLES -- Connections may be made by excavating the existing main and cutting a hole using approved equipment and installing a saddle. Sewer service connections constructed with saddles shall include straps, a one-eighth (1/8") degree bend, and a closure piece; when existing main has been rehabilitated by trenchless method of construction, the saddle connection shall be made to the pipe or liner.
   b. TEES -- Connections maybe made by removing a section of existing pipe and installing a wye branch. Fittings and closure assembly shall be used to make the connection and shall be supplied in a normal diameter or six (6") inches. The external connection shall be considered complete when backfilling and surface restoration is complete. Service connections constructed with wye branches shall include a one-eighth (1/8") degree bend elbow and when required, a closure piece.

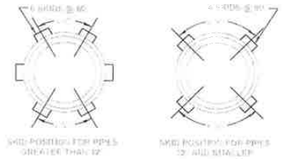
3. RISER:
   a. INSTALLATION -- The pipe may be installed in one of three ways shown above.
   b. SIZE AND MATERIAL -- The riser pipe shall be six (6") inch PVC or DIP.
   c. CONCRETE ENCASEMENT -- Concrete encasement around riser shall meet the requirement established above.

4. LOCATOR TAPE -- A locator tape, green in color stating "CAUTION -- SANITARY SEWER RISER BURIED BELOW" shall be attached to the sanitary sewer riser and extended to a minimum of two (2') feet above the ground, the tape shall be three (3") inch wide DuraTac as manufactured by THOR Enterprises, Inc., of Sun Prairie, Wisconsin or approved equal.

BORING STANDARD DETAIL



PROFILE



SECTION

NOTES:

1. WOOD SKID SUPPORTS -- Wood slat supports, from bell to spigot, shall be used and fastened securely to pipe with steel strapping, cables or clamps. Use of petroleum products shall not be allowed as a lubricant to ease installation. When wood skids are used they shall be pressure treated with creosote pentachlorophenol, or salt type preservative in accordance with APWA C-2. Cut surfaces shall be given two (2) heavy brush coats of the same preservative.

2. PLUGGED PIPE ENDS -- both ends of the casing pipe shall be plugged with a grout or concrete having a minimum compressive strength of twenty-five hundred (2500 psi) pounds per square inch or grouted masonry. Each plug shall be a minimum length of eighteen (18) inches. The grouting presser shall be in accordance with the pipe manufactures recommendations.

3. FILLING ANNULAR SPACE -- The annular space between the sanitary sewer pipe and the steel casing shall be filled with a flowable fill consisting of a Portland cement grout having a minimum twenty-eight (28) day compressive strength of one-thousand (1,000 psi) pounds per square inch, the contractor shall install a vent pipe higher than the upper end of the pipe to ensure the annulus is completely filled with grout.

4. CASING PIPE SIZE -- Steel casing pipe shall have the following suggested minimum diameters:

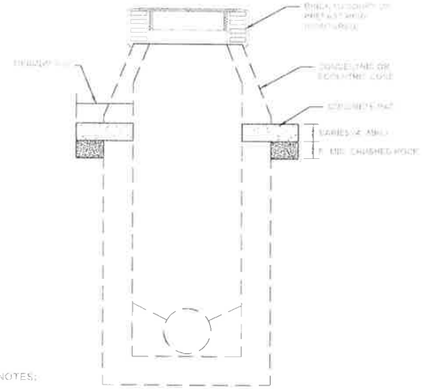
PIPE NOMINAL SIZE (inches)	SUGGESTED CASING PIPE INSIDE DIAMETER (inches)
4	8 to 10
6	10 to 12
8	14 to 16
10	16 to 18
12	18 to 20
15	20 to 22
18	24 to 26
24	30 to 32
27	32 to 36
30	36 to 42
36	42 to 48
42	56 to 60
48	60 to 72

5. CASING PIPE THICKNESS -- Steel casing pipe shall have the following minimum thickness(es), in inches, for the indicated maximum depth of cover(s), in feet.

DIVISION DIAMETER (inches)	UNDER HIGHWAY		UNDER RAILROAD	
	WALL THICKNESS (inches)	WALL THICKNESS (inches)	WALL THICKNESS (inches)	WALL THICKNESS (inches)
= 12 3/4"	0.188	30	0.280	30
16	0.250	30	0.281	30
18	0.250	30	0.322	30
20	0.250	30	0.344	30
24	0.250	30	0.406	30
30	0.322	30	0.469	30
32	0.375	30	0.531	30
42	0.375	25	0.531	30
48	0.438	25	0.531	25
54	0.438	25	0.531	25
60	0.438	25	0.531	25
66	0.438	25	0.531	25

6. CASING MATERIAL -- Steel casing pipe shall conform with ASTM A-139, Standard Specification for Electric-Fusion (ARC)-Welded Steel Pipe (NPS4 and over). The steel material shall be new, smooth wall, carbon steel, Grade B, with a minimum tensile strength and minimum thirty-five-thousand (35,000 psi) pounds per square inch yield strength.

STANDARD DETAILS FOR REBUILDING MANHOLES

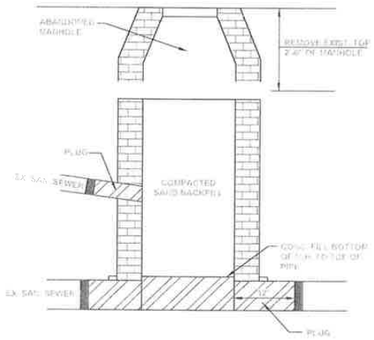


NOTES:

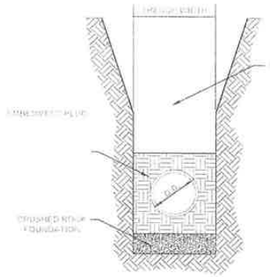
1. CAST-IN-PLACE NON-REINFORCED CONCRETE AND BRICK MANHOLES -- The existing cone and wall, if necessary, shall be removed to a level which will allow installation of new cone to the proper grade. The exposed cut-off surfaces of the existing manhole wall shall be cleaned by removing loose material and wetted prior to construction of concrete pad. All loose backfill around the manhole wall shall be removed and replaced with compacted crushed rock, the new concrete pad shall be constructed, and a new cone shall be formed or placed to the proper grade using fifteen (1500 psi) pounds per square inch mortar.

2. PRECAST REINFORCED CONCRETE MANHOLES -- Precast sections shall be removed to a level where the new cone can be installed to the desired grade. Installation shall be in accordance with the appropriate Standard Detail for Precast Manhole cones. A new rubber gasket shall be used to seal each section.

STANDARD DETAILS FOR ABANDONING MANHOLES



EMBEDMENT PLUG STANDARD DETAIL



NOTES:

Two types of embedment plugs may be used, at the Contractors option, as follows:

1. CLAY PLUGS -- the embedment and backfill material shall be select clay separated from excavated material and shall be approved by the Engineer prior to placement. This material shall be free of clods, clumps, debris, organic material and stones, all clay plug material shall be compacted to a minimum of ninety (90%) percent of Standard Proctor Density (ASTM D-698) at plus or minus three (3%) percent of Optimum Moisture Content.

2. FLOWABLE FILL PLUGS -- Flowable fill plugs shall consist of a Portland Cement grout having a minimum twenty-eight (28) day compressive strength of five hundred (500 psi) pounds per square inch.

Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Sanitary Sewer Misc. Details

City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: HORIZONTAL NTS / VERTICAL NTS
DRAWN | DESIGNED | OFFICE ENGR | CHIEF ENGR | RECOMMENDED DIRECTOR | RECOMMENDED | CITY ENGINEERING DEPT | ENGINEERING DIRECTOR | DATE | APPROVED
ATLAS PAGE NO.
SHEET 5 of 8

GENERAL CONSTRUCTION NOTES

1. All construction shall be in accordance with The City of Glenpool Standard Specifications for Construction of Public Improvements.

2. All work not classified as a contract pay item shall be considered as an incidental and not paid for directly.

3. All excavation under existing and future pavement shall be backfilled with sand.

4. All waterlines exposed during construction shall be backfilled with sand.

5. Pipe leakage tests shall be performed by the contractor in accordance with the Glenpool Sewer requirements. Leakage shall not exceed 55 gallons per inch of normal pipe per mile per day for any section of the system.

6. Deflection tests shall be performed on all flexible pipe. The test shall be conducted after the final backfill has been in place for at least thirty (30) days. No pipe shall exceed a deflection of more than five (5%) percent. If the deflection test is to be run using a rigid ball and mandrel, it shall have a diameter equal to ninety-five (95%) percent of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.

7. Polyvinyl chloride (PVC) pipes shall conform to ASTM D-3034, ASTM F-679, and ASTM F-789 and ASTM F-89-45 for profile wall pipe. Regardless of size, open profile wall pipe will be allowed only on sections of pipe where there are no apparent service connections.

8. Special sanitary sewer pipe shall be required to satisfy minimum horizontal and vertical clearance requirements from waterlines, wells and petroleum storage tanks, as established by the Oklahoma State Department of Environmental Quality (ODEQ).

9. Special sanitary sewer pipe shall be either PVC or Ductile Iron Pipe (DIP). Special PVC pipe shall conform to ASTM D-2241 and SDR 32.5 for sizes four (4") inches to thirty-six (36") inches, or AWWA C-900 and AWWA C-905, with a minimum DR rating of eighteen (18) for pipe sizes four (4") inches to (12") inches and a minimum DR rating of 32.5 for pipe sizes greater than twelve (12") inches. DIP pipes shall meet the requirements specified below.

10. Ductile Iron Pipe (DIP) shall conform to the requirements of AWWA C-151.
    a. EXTERIOR COATING -- The exterior surfaces of ductile iron pipe, specifications and fittings shall be coated with an asphaltic coating in accordance with ASTM A746, section 6.1, of AWWA C-151. The coating shall have a minimum thickness of one (1) mil.
    b. INTERIOR COATING -- Interior surfaces of pipe and fittings shall be lined with fourty (40) mills of virgin Polyethylene complying with ASTM D-1248 or Madison Polyethylene Lining Corporate II bx-8 Minute Number 17115 manufactured by Madison Chemicals, Inc., Canada, or approved equal. The lining materials shall be compounded with a minimum of two (2%) percent carbon black to resist ultra violate rays.
    c. THICKNESS -- Unless otherwise specified, Ductile Iron Pipe shall have the following table.

MANHOLE TESTING

1. GENERAL -- When called for on the plans or specified, manholes shall be tested, before acceptance, by either performing exfiltration or vacuum test. The Engineer shall determine which test shall be performed.

2. EXFILTRATION TEST -- All incoming and outgoing lines (excluding services) shall be plugged and the manhole filled with water up to the bottom of the manhole ring. If the water loss exceeds the maximum allowable as shown, the manhole shall be considered to have failed the test, the contractor shall drain, perform the necessary repairs as directed by the Engineer, and then reset the manhole until it passes all at no additional cost to the City.

Manhole Depth (feet)	Maximum Allowable Water Loss
≤ 8	One (1") inch over Five (5) minutes
> 8	One - Eighth(1/8") inch per vertical foot of depth over five (5) minutes

3. VACUUM TESTING -- All incoming and outgoing sewer and service lines shall be plugged, the plugs restrained and the vacuum tester head placed on the manhole ring and sealed. A vacuum of ten (10") inches Hg (Mercury) shall then be drawn on the manhole and the time measured for the vacuum to drop to nine (9") inches Hg. The time measured shall be not less than that shown on the following table.

Manhole Internal Diameter (feet)	Time Measured (seconds)
4	50
5	60
6	68
7	76

MANHOLE NOTES

1. MANHOLE -- PIPE CONNECTION AT INVERTS -- Flexible gaskets seals shall be required where pipe enters the wall of all manholes. Where possible, the opening for each connecting sewer pipe shall be circular and match the diameter of the pipe. For manholes built over existing lines or for special conditions, horseshoe shaped openings shall be accepted. Flexible gaskets shall be A-Lok, or approved equal. The method and material used for grouting any remaining angular space shall be approved by the Engineer prior to construction.

2. FINISHING MANHOLE TO GRADE --The manhole ring and cover shall be adjusted to grade with concrete rings or courses of brick masonry.

3. OUTSIDE WATERPROOFING -- When called for on the plans or specified, waterproofing shall be required on the outside of the manholes. The waterproofing material shall be TNEMEC Series 66 HI of approved equal. The coating shall have a minimum thickness of four (4) mills. Coating shall be environmentally non-hazardous. Spray applications shall be shop applied and field applications are limited to brush or roller. Acceptance of material used for waterproofing shall be on the basis of Type "D" Certifications, provided that all applicable requirements are met.

4. VERTICAL DROP -- The vertical drop of concrete pours shall not exceed ten (10') feet. The Contractor may select to use either a construction joint as shown on the standard detail or use a tremmie.

5. CONCRETE PLACEMENT -- Monolithic pours of the manhole bottom and walls shall be permitted provided that all concrete (bottom and walls) is vibrated according to the specifications for the construction of sanitary sewers and appurtenances.

6. COMPRESSION STRENGTH -- All concrete for manhole bases, inverts and wall shall have a minimum compression strength of 3600 psi.

7. FORMING -- Forms shall be provided for the shaping and finishing of the manhole bottoms. A minimum of twenty-four (24) hours shall elapse prior to pouring the manhole walls.

8. CONCRETE RINGS -- Mortar for finishing and sealing shall be class "C". Any honeycombing of concrete less than two (2") inches deep in manhole walls may be repaired using Class "D" mortar.

A. CAST-IN-PLACE MANHOLES

1. DIMENSIONS -- The manholes shall be constructed pursuant to appropriate Standard Details for Precast-In-Place Non-Reinforced Concrete Manholes.

2. PROTECTIVE COATING -- Protective coating shall not be required unless otherwise called for on the plans or as directed by the Engineer.

B. PRECAST MANHOLES

1. APPLICABLE STANDARD -- Pre-cast manholes shall be constructed in accordance with ASTM C-478.

2. DIMENSIONS -- The manholes shall be constructed pursuant to the appropriate Standard Details for precast reinforced concrete manholes, and/or as specified in ASTM C-478, the minimum wall thickness shall be as specified in the following table and not less than one-twelfth (1/12) of the internal diameter of the largest cone or riser section of five (5'") inches, whichever is greater.

Manhole Internal Diameter (feet)	Minimum Wall Thickness (inches)
4	5
5	5
6	6
7	7

3. MANHOLE STEPS AND LADDERS -- Steps and ladders shall not be constructed unless otherwise directed by the Engineer. If called for, they shall conform with Section 13 of ASTM C-478.

4. HANDLING -- All lifting holes shall be repaired with a mixture of cement and sand grout firmly packed.

5. PROTECTIVE COATING -- All inside surfaces (walls, bottoms and etc.) of precast concrete manholes shall be shop coated with a total dry film thickness of not less than eight (8) mils of TNEMEC Series 66 Hi-Build Epoxoline II or approved equal.

6. FIELD TESTING -- When directed by the Engineer, a set of three (3) cylinders three (3") inches in diameter shall be cut from randomly selected manholes.

7. ACCEPTANCE -- Acceptance of manhole structure shall be based on the conformance and performance of materials required in ASTM C-478 and the Engineer's inspection of the installed product.

Pipe Nominal Thickness (inches)	DEPTH of COVER (feet) ≤10'		>10' or ≤15'		>15' or ≤20'		>20' or ≤25'		>25' or ≤30'	
	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151	Nominal Thickness (inches)	Standard Pressure Class AWWA C-151
3	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
4	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
6	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
8	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
10	0.26	350	0.26	350	0.26	350	0.26	350	0.26	350
12	0.28	350	0.28	350	0.28	350	0.28	350	0.28	350
18	0.31	250	0.31	250	0.31	250	0.31	250	0.34	300
24	0.33	200	0.33	200	0.33	300	0.38	200	0.38	300
30	0.34	150	0.34	150	0.34	250	0.42	150	0.45	300
36	0.38	150	0.38	150	0.38	250	0.47	150	0.50	300
42	0.41	150	0.41	150	0.41	250	0.52	150	0.63	350
48	0.46	150	0.46	150	0.46	300	0.64	150	0.70	350
54	0.51	150	0.51	150	0.51	300	0.72	150	0.79	350
60	0.54	150	0.54	150	0.54	300	0.76	150	0.83	350
64	0.56	150	0.56	150	0.56	300	0.80	150	0.87	350

Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Sanitary Sewer Const. Notes
City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: HORIZONTAL N.T.S. VERTICAL N.T.S.
DRAWN
DESIGNED
OFFICE ENGR.
CHIEF ENGR.
RECOMMENDED DIRECTOR
RECOMMENDED
CITY ENGINEERING DEPT.
ENGINEERING DIRECTOR
APPROVED
DATE
ATLAS PAGE NO.
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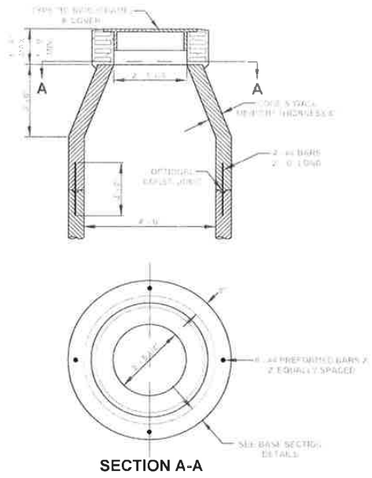
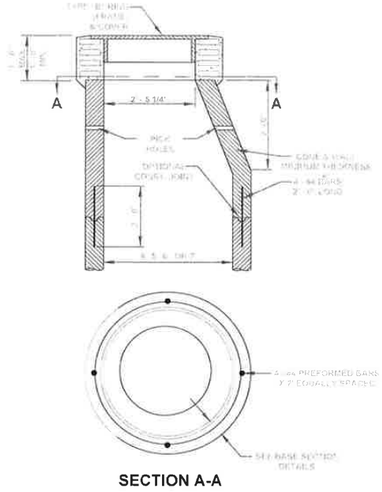
CONCENTRIC MANHOLE DETAIL



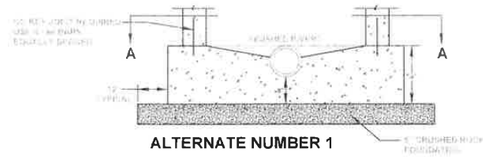
SECTION A-A

ECCENTRIC MANHOLE DETAIL

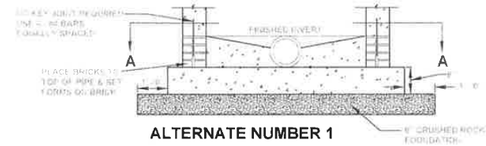


SECTION A-A

STANDARD DETAIL FOR MANHOLE BASE SECTION

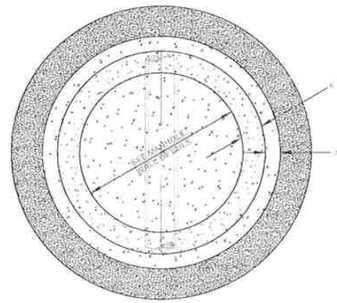


ALTERNATE NUMBER 1



ALTERNATE NUMBER 1

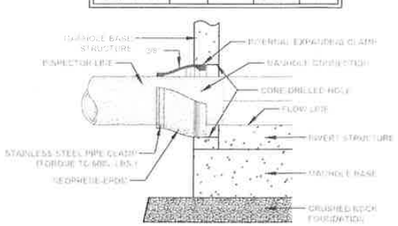
SCHEDULE OF THICKNESS ALTERNATE #1	
PIPE DIAMETER	B
8"	1'-0"
10"	1'-0"
12"	1'-0"
15"	1'-0"
18"	1'-0"
21"	1'-0"
24"	1'-0"



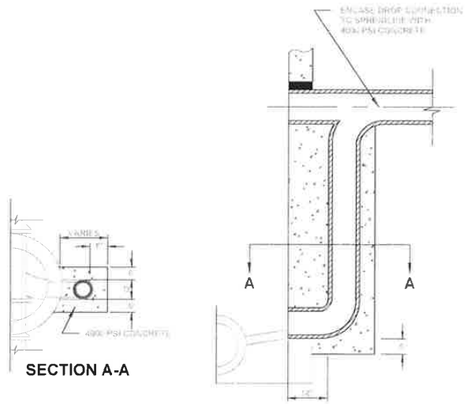
SECTION A-A

CAST-IN-PLACE NON-REINFORCED MANHOLE-PIPE CONNECTION

SUGGESTED PIPE O.D. RANGE (IN.)	HOLE & BOOT DIAMETER DIMENSIONS			
	A	B	C	D
2 1/2" - 4 1/2"	7"	6 1/8"	2 1/2"	6"
5 3/8" - 7"	10"	10 7/8"	6 1/2"	8"
7" - 8 1/2"	12"	10 7/8"	8"	8"
8 3/8" - 9 1/4"	12"	10 7/8"	9 1/2"	8"
9 1/4" - 11"	16"	14 7/8"	10 1/2"	8"
10 1/2" - 11"	16"	14 7/8"	12"	8"
12" - 13 1/4"	16"	14 7/8"	13 1/2"	8"
14 1/2" - 16 1/4"	20"	18 7/8"	15 3/4"	8"
15 3/4" - 17 1/2"	20"	18 7/8"	17"	8"
18 1/2" - 21 1/4"	24"	22 7/8"	20 3/4"	8"

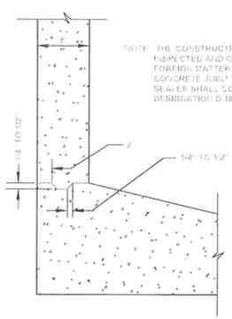


MANHOLE DROP CONNECTION



SECTION A-A

STANDARD DETAIL FOR MANHOLE JOINTS (OPTIONAL)



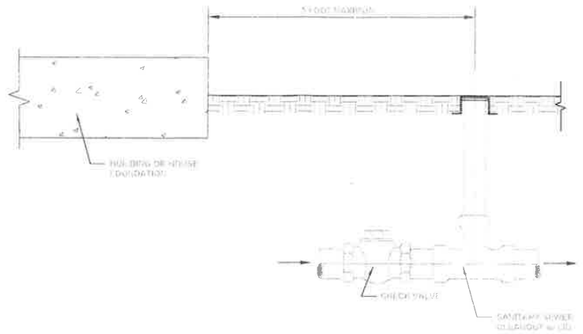
Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Sanitary Sewer Details
City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

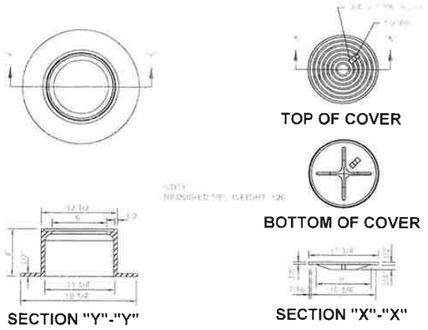
REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: HORIZONTAL NTS, VERTICAL NTS
ATLAS PAGE NO.

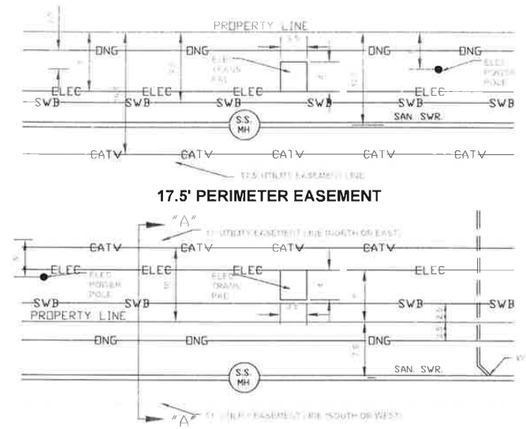
DRAWN | APPROVED
DESIGNED
OFFICE ENGR
CHIEF ENGR
RECOMMENDED DIRECTOR
RECOMMENDED — CITY ENGINEERING DEPT.
ENGINEERING DIRECTOR — DATE
SHEET 7 OF 8

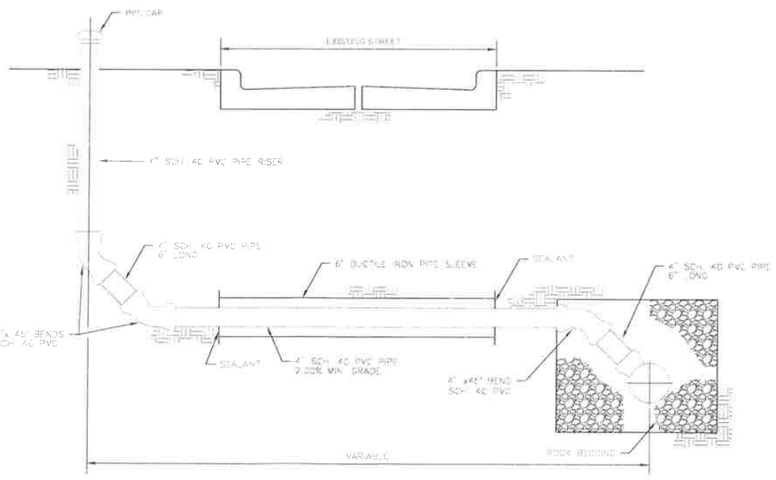


STANDARD DETAIL FOR SANITARY SEWER BACKFLOW PREVENTERS

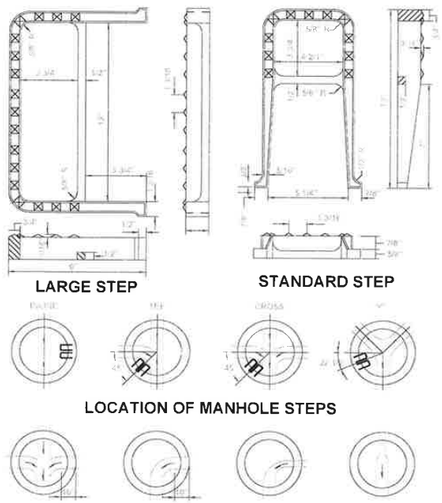


STANDARD DETAIL FOR CLEANOUT FRAME AND LID

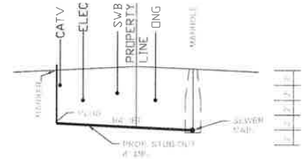




LONG SERVICE CONNECTION



MANHOLE STEPS & INVERT DETAILS



SECTION "A"-"A"

BACKYARD PERIMETER UTILITY LOCATIONS

Sanitary Sewer Relocation
Lot 11, Block 9, Rolling Meadows Addn

Sanitary Sewer Details

City of Glenpool, Oklahoma
12205 S. Yukon Avenue
Glenpool, Oklahoma 74033

REVISION	BY	DATE

PLAN SCALE: NTS
PROFILE SCALE: HORIZONTAL NTS, VERTICAL NTS
DRAWN | APPROVED | DESIGNED | OFFICE ENGR | CHIEF ENGR | RECOMMENDED DIRECTOR | RECOMMENDED | CITY ENGINEERING DEPT | ENGINEERING DIRECTOR | DATE
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